

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

REC'D 12 AUG 2004

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Applicant's or agent's file reference 1133WOORD01	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/08996	International filing date (day/month/year) 13.08.2003	Priority date (day/month/year) 17.08.2002
International Patent Classification (IPC) or both national classification and IPC C07D471/04		
Applicant ALTANA PHARMA AG et al.		



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

I	<input checked="" type="checkbox"/>	Basis of the opinion
II	<input type="checkbox"/>	Priority
III	<input checked="" type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	<input type="checkbox"/>	Lack of unity of invention
V	<input checked="" type="checkbox"/>	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	<input type="checkbox"/>	Certain documents cited
VII	<input type="checkbox"/>	Certain defects in the international application
VIII	<input type="checkbox"/>	Certain observations on the international application

Date of submission of the demand 06.03.2004	Date of completion of this report 11.08.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Steendijk, M Telephone No. +49 89 2399-8460 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP 03/08996

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-47 as originally filed

Claims, Numbers

1-16 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/08996**

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 15,16

because:

☒ the said international application, or the said claims Nos. 15,16 relate to the following subject matter which does not require an international preliminary examination (specify):

see separate sheet

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-16
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 03/08996

- 1) The present application relates to guanidinoyl substituted benzonaphthyridines having PDE3/4 inhibiting activity.
- 2) The following documents are cited:

D1: WO 98 21208 A
D2: WO 99 57118 A
D3: EP-A-1 270 577 (WO 01 70746 A)
D4: EP-A-0 490 823
D5: WO 02 066476

Document D5 was published after the priority claimed for the present application. This document is only considered as prior art in as far as the priority is not valid. The priority seems only fully valid for claims 6-9 but not for claims 1-5 and claims 10-16 in as far as not dependent from claims 6-9.

- 3) Novelty
Documents D1-D2 describe substituted benzonaphthyridines having PDE3/4, which are not guanidinoyl substituted derivatives.
Document D3 mentions a guanidinoyl-phenyl substituted furo-isoquinoline (see compound 150, page 527) but no benzonaphthyridines.
Document D4 describes phenyl substituted isoquinolines but no benzonaphthyridines or guanidinoyl-phenyl substituted derivatives.

The compounds of document D5 are not comprised in the definition of the compounds of the present application.

- 4) Inventive step
- 4.1) Priority valid

Documents D1-D2 may be considered as closest prior art describing related compounds with PDE3/4 inhibiting activity.

Merely as solution to the problem of providing alternative agents with PDE3/4 inhibiting activity, the claimed subject-matter would seem obvious. From the variety of possible substitutions it would be evident to the person skilled in the art that the substitutions to the phenyl group are very not critical for the activity of the compounds. The structural modification in the

form of a guanidinoyl group instead of a substituted aminocarbonyl group would seem a minor modification, which in the light of the variety of substitutions in the prior art would not be likely to cancel the relevant activity. In fact a (cyclic) guanidinoyl phenyl group has been referred to in D4 in the context of structurally related PDE4 inhibitors.

4.2) Priority not valid

The above observation is further reenforced in as far as the priority is not valid in view of document D5 as closest prior art.

5) Further observations

Claims 15 and 16 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(I) PCT).